

ABSTRACT

Disclosed is a ferromagnetic group IV-based semiconductor or a ferromagnetic group III-V-based or group II-VI-based compound semiconductor, comprising a group IV-based semiconductor or a group III-V-based or group II-VI-based compound semiconductor, which contains at least one rare-earth metal element selected from the group consisting of Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb and Lu. The ferromagnetic characteristic of the ferromagnetic semiconductor is controlled by adjusting the concentration of the rare-earth metal element, combining two or more of the rare-earth metal elements or adding a p-type or n-type dopant. The present invention can provide a ferromagnetic group IV-based semiconductor or a ferromagnetic group III-V-based or group II-VI-based compound semiconductor which exhibits light transparency and stable ferromagnetic characteristics.